



Cambourne to Cambridge Better Public Transport Project

Outline Business Case
Financial Case

17 January 2020

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Glossary of terms

Analysis of Monetised Cost and Benefits (AMCB) table: Summarises the monetised impacts of a scheme that are included in the scheme's Net Present Value and Benefit-Cost Ratio.

Appraisal Summary Table (AST): Provides a complete summary of the scheme impacts, including the scheme's monetised impacts, and non-monetised impacts (both quantitative and qualitative).

Benefit Cost Ratio (BCR): Benefit Cost Ratio, is an indicator of the overall value for money of a project or proposal.

Cambridgeshire Autonomous Metro (CAM): CAM is the proposed metro style system for Greater Cambridge.

Committed Schemes: Where a scheme has been deemed likely to proceed and is therefore included within the option appraisals.

Conservation Area: An area designated under Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990 as being of special architectural or historic interest and with a character or appearance which is desirable to preserve or enhance.

Context: The setting of a site or area, including factors such as traffic, activities and land uses as well as landscape and built form.

Countryside: The rural environment and its associated communities.

Cumulative Impact: The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.

Early Assessment Sifting Tool (EAST): Early Assessment Sifting Tool is used by DfT, to quickly summarise and present evidence on options. INSET is an enhancement of EAST and follows the same broad principles and approach.

Effect: The consequence of the scale of any change to the baseline environment, i.e. impact, on the environmental receptor, taking account of its particular value or sensitivity.

Element: A component part of the landscape (for example, roads, hedges, woods).

Enhancement: Landscape improvement through restoration, reconstruction or creation.

Environment: Our physical surroundings including air, water and land.

Environmental Impact Assessment (EIA): A formal, structured process of evaluating the likely environmental impacts of a proposed scheme, considering inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

Full Business Case (FBC): The culmination of the final phase is the Full Business Case. An investment committee will consider the Full Business Case then make a recommendation to ministers. Ministers will decide whether a proposal should proceed to implementation.

Form: The layout (structure and urban grain), density, scale (height and massing), appearance (materials and details) and landscape of development.

Gross Domestic Product (GDP): A measure of the total value of goods produced and services provided in an area.

Gross Value Added (GVA): A measure of the economic productivity of an area.

High Quality Public Transport (HQPT): High Quality Public Transport, is a transport system that includes a range of features such as high levels of segregation, junction priority, high quality infrastructure (shelters, CCTV, real time, lighting, seating, help points etc), and high quality vehicles to name but a few.

Heritage Asset: A building, monument, site, place, area or landscape of historic value.

Investment Sifting and Evaluation Tool (INSET): INSET is Mott MacDonald's evaluation tool used in the optioneering process. INSET is an enhancement and expansion of EAST.

Landform: Combination of slope and elevation that produce the shape and form of the land.

Landscape: The character and appearance of land, including its shape, form, ecology, natural features, colours and elements and the way these components combine. Landscape character can be expressed through landscape appraisal, and maps or plans. In towns 'townscape' describes the same concept.

Landscape Character: The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.

Landscape Feature: A prominent eye-catching element, for example, wooded hilltop or church spire.

Landscape Quality: Based on judgements about the physical state of the landscape, and about its intactness, from visual, functional, and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place.

Landscape Sensitivity: The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.

Land Use: The primary use of the land, including both rural and urban activities.

Local Liaison Forum (LLF): The LFF provide a link between a project team and the local community.

Multi Criteria Assessment Framework (MCAF): Multi-Criteria Assessment Frameworks are used in the optioneering assessment process and allow options to be assessed against a range of criteria linked to the scheme objectives as well as wider policy and strategy objectives.

Methodology: The specific approach and techniques used for a given study.

Mitigation: Measures, including any process, activity or design to avoid, reduce, remedy or compensate for adverse landscape and visual effects of a development project.

Modal Shift: A shift from one transport type to another e.g. road travel to rail travel.

Movement: People and vehicles going to and passing through buildings, places and spaces. The movement network can be shown on plans, by space syntax analysis, by highway designations, by figure and ground diagrams, through data on origins and destinations or

pedestrian flows, by desire lines, by details of public transport services, by walk bands or by details of cycle routes.

Option Assessment Report (OAR): The Options Assessment Report sets out the process undertaken to identify and assesses options, leading to the selection of the preferred option.

Outline Business Case (OBC): Is the second phase of the process which reconfirms the conclusions of set out in the Strategic Outline Business Case (SOBC). The OBC focuses on the detailed assessment of the options to find the best solution.

Public Accounts (PA) table: Records the investment and operating costs incurred by a public sector in delivering the scheme.

Receptor: Something that makes up the environmental baseline e.g. humans or other biological species, elements of the physical environment including water, air, soil, assets that make up the cultural heritage of an area.

SATURN: Simulation and Assignment of Traffic in Urban Road Networks, is a computer program that calculates route choices between origin and destination.

Strategic Outline Business Case (SOBC): This sets out the need for intervention (the case for change) and how this will meet strategic aims and objectives (the strategic fit). It provides suggested or preferred ways forward and presents the evidence for a decision.

Strategic View: The line of sight from a particular point to an important landmark or skyline.

Sustainability: The principle that the environment should be protected in such a condition and to such a degree that ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.

Transparent Economic Assessment Model (TEAM): TEAM is a tool designed to calculate the economic impacts and benefits of proposed infrastructure interventions and policy measures.

Topography: A description or representation of artificial or natural features on or off the ground.

Townscape: Physical and social characteristics of the built and unbuilt urban environment and the way in which those characteristics are perceived. The physical characteristics are expressed by the development form of buildings, structures and space, whilst the social characteristics are determined by how the physical characteristics are used and managed.

Tranquillity: A state of calm or quiet.

Transport Appraisal Guidance (TAG): The DfT's Transport Appraisal Guidance (often referred to as TAG)

Transport Economic Efficiency (TEE) table: Summarises the monetised impacts against different user groups.

Transport User Benefit Appraisal (TUBA): TUBA is an economic appraisal computer programme developed for the Department for Transport (DfT) for appraising multi modal transport studies.

Visual Impact: Change in the appearance of the landscape as a result of development. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction).

Wider Economic Impacts (WEI): improvements in economic benefits that are acknowledged, but which are not typically captured in traditional cost-benefit analysis.

1 Introduction

This is the Financial Case for the Camborne to Cambridge Better Public Transport project (C2C) and forms one of the 5 cases for the Outline Business Case.

The Financial Case outlines the affordability of the C2C preferred option, its funding arrangements and technical accounting issues. The case presents the financial profile of the preferred scheme option and an overview of how the scheme will be funded.

1.1 Approach

The DfT's guidance document, '*The Transport Business Case: Financial Case*'¹, outlines the areas that should be covered as part of the Financial Case. This has been used as a broad guide in developing the structure and content of the Financial Case. Table 1 shows where the relevant information, in accordance with DfT requirements can be found in the subsequent sections that make up the Financial Case.

Table 1: Compliance with DfT requirements for the Financial Case

Content	DfT requirements	OBC section
Introduction	Outline the approach taken to assess affordability	1 Introduction 1.1 Approach
Costs	Provide details of: <ul style="list-style-type: none"> Expected whole life costs When they will occur Breakdown and profile of costs by those parties on whom they fall Any risk allowance that maybe needed (in the event of things going wrong)	2.1 Base costs 2.2 Quantified cost risk assessment 2.3 Spend profile 2.4 Maintenance and renewals costs 2.5 Operating costs
Budget/ Funding Cover	Provide analysis of the budget/ funding cover for the project. Set out, if relevant, details of other funding sources (e.g. third-party contributions, fees)	3 Funding arrangements 3.1 Funding profile
Accounting Implications	Describe expected impact on organisation's balance sheet	4 Accounting implications

Source: DfT - The Transport Business Case

¹ DfT – The Transport Business Cases (January 2013)
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf

2 Scheme Costs

Scheme costs for the preferred option have been developed based upon the designs for a physically guided system as set out in Appendix R. The detailed breakdown of costs are included in Appendix O. Land cost estimates have been prepared separately and included within overall scheme costs. The scheme cost is considered proportionate and affordable to the scale of the issues identified in the Strategic Case and the predicted benefits of the scheme as assessed in the Economic Case. The costs include preparation costs, the design, construction, land acquisition, inflation and other costs.

Total scheme base costs at OBC stage needed to deliver the project amount to £127,606,928. A high-level breakdown of the costs are presented in Table 2 under Section 2.1. An additional amount of £32,881,663 has been estimated to cover risks as shown in Table 3 under Section 2.2.

The total combined capital cost of the scheme is **£160,488,591**. These costs constitute the funding ask.

2.1 Base costs

Indicative base costs (Appendix O – Project Costs Breakdown) of the C2C project preferred scheme option have been produced by Mott MacDonald cost estimators. The base costs excluding any allowance for risk.

The base cost estimates include the following:

- **Construction costs:** These consist of:
 - Main works contract (preliminaries, structures, road works, general works, earthworks)
 - Ancillary work contracts (maintenance compounds, lighting, communications, landscaping, noise insulation)
- **Design Costs:** This accounts for design fees, on-site supervision and testing of scheme elements prior to scheme opening.
- **Project Management costs:** This consists of all project management, public consultation, public inquiry, and the costs of obtaining statutory orders.
- **Environmental Mitigation:** Allowance for fees to provide mitigation.
- **Statutory Undertakings:** Costs to divert or protect existing Statutory Undertakers' equipment affected by the works.
- **Land costs:** This includes the acquisition and legal transaction costs for all the required private and commercial land, and additionally accounts for property management costs and compensation.
- **Inflation costs:** This accounts for inflation above the base cost estimates in accordance with RPI.

Key assumptions made with regards to deriving robust estimated scheme costs included:

- The project began in 2014 and is expected to be completed by 2024
- An opening year of 2024

- The scheme will use guided system technology²
- Scheme costs are prepared in Q4 2018 prices
- Inflation rate applied based on RPI at 3% per year

Table 2 shows the breakdown of costs for the preferred scheme option:

Table 2: Preferred Option base costs (exclusive of any risk allowance)

Cost Item	Preferred Option
Construction	£82,481,000
Design	£13,17,000
Project Management	£9,707,000
Environmental Mitigation	£1,394,000
Statutory undertakings	£1,100,000
Land Costs	£7,951,000
Inflation	£11,777,000
TOTAL	£127,607,000

Source: Mott MacDonald

2.2 Risk adjusted costs

As the scheme design for the preferred option is at an early stage of progression, there is significant development work required to be undertaken to progress the design to the point where the scheme can be constructed. It is therefore important to recognise that there is uncertainty in the design and assumptions upon which the costs are based and to reflect this an uplift is applied to the base costs.

Therefore, at the current stage of development (OBC), a confidence level of P80 risk has been applied to calculate the overall project cost estimate (this is the base costs plus the risk value). The value that has been applied is 25%. A cost range has also been calculated based on P50 (19%) and P90 (29%) contingency allowances. Table 3 provides a breakdown of costs adjusted for risk for the preferred option.

The cost of the preferred option adjusted for risk is therefore £160,488,000, with a range of £153,423,000 to £165,199,000.

Table 3: Preferred Option base costs adjusted for risk

Cost Item	Preferred Option
Construction	£103,101,000
Design	£16,496,000
Project Management	£12,134,000
Environmental Mitigation	£1,743,000
Statutory undertakings	£1,100,000
Land Costs	£11,114,000
Inflation	£14,800,000
TOTAL inc. risk	£160,488,000
Range	£153,423,000 - £165,199,000

Source: Mott MacDonald

² For the basis of costings for the Outline Business Case – the assumed guided system is based around a kerb guided system design representing a “worst case” assumption. The C2C scheme aspires to utilise future technology, with work on-going to review available technological solutions that are future proofed i.e. compatible with CAM.

At next stage of development (FBC), the designs and details of the preferred option and project will be of a higher maturity, with unspecified uncertainties reduced to a minimum. All known areas of uncertainty will be documented on the Risk Register. The Risk Register will be used to identify, quantify and value the known uncertainties of the C2C project. It will identify who owns each uncertainty, provide an assessment of the likelihood of occurrence (risk percentage) and an estimate of the impact on project outcomes (cost and duration).

Based on this, a Quantitative Cost Risk Assessment (QCRA) process will be followed, using the project cost estimation, Risk Register data and Monte Carlo simulation software to determine the contingency allowance for inclusion at FBC stage.

2.3 Spend profile

Table 4 shows the annual spend profile for the preferred option. The amount for risk has been proportionally allocated in accordance with the level of spend on works each year.

Table 4: Annual Spend Profile – Preferred Option (£,000's)

Cost Item	Costs 2014-19 ³	2020	2021	2022	2023	2024
Annual costs	£3,214	£8,661	£10,568	£61,977	£68,354	£7,714
Cumulative TOTAL	£3,214	£11,875	£22,443	£84,420	£152,774	£160,488

Source: Mott MacDonald

2.4 Maintenance and renewals costs

TAG Unit A1.2 (Scheme Costs) states that traffic-related maintenance and renewal costs should also be considered in addition to capital investment costs. The potential financial costs of ongoing maintenance include:

- General inspection of infrastructure and regular maintenance / replacement
- General street cleaning
- Landscaping maintenance
- Gully cleaning
- Replacement of street lighting fittings
- Maintenance of bus stop fittings
- Maintenance of traffic signals
- Maintenance of welfare building at Park & Ride site.

The assessment of maintenance costs assumes a period from opening year of 2024 to 2084 with a budget of £66,041,505, this equates to yearly maintenance cost of £1,100,692m/yr.⁴ There are peaks and troughs with the Maintenance cost as some of the works are carried out as part of annual highway maintenance, others such as planning and resurfacing the roads are carried out periodically as and when the top surface reaches the end of its design life. Operating costs for the Park & Ride site and busway have been included in the maintenance costs outlined above.

For annual maintenance costs it is assumed that payments will be in equal instalments across a 25-year period and will commence one year after the scheme opens, which is assumed to be 2024. However, at this time maintenance costs are subject to negotiation with potential

³ These costs account for spending on developing the scheme up to OBC submission.

⁴ These costs are based on previous experience of busway schemes and provided by Mott MacDonald's in-house cost estimating team.

providers and are therefore commercially sensitive, so are not published in this OBC. They will be known with more clarity at FBC stage and published at that time.

2.5 Operating costs

Whilst there is potentially a cost for the purchase and operation of new vehicles for C2C, a final preferred operating model for the scheme is yet to be confirmed. The options for operating the scheme have been set out in the Commercial Case, with a final decision of a preferred option to be confirmed for the FBC (as in line with DfT guidance). As such any operating costs associated with the vehicles do not form part of the current funding ask.

As well as vehicle operating costs, there are also operational cost items associated with the Park & Ride site itself and the busway. Some of these are noted in Table 5 along with assumptions and estimated quantities. As with maintenance costs, operating costs for both the site and the buses are subject to negotiation with potential providers and are therefore commercially sensitive and so are not published in this OBC. They will be known with more clarity at FBC stage and published at that time, though again they do not form part of the funding ask.

Table 5: Busway and Park & Ride potential operating requirements

Operating Cost Item	Assumptions	Quantity	Unit
Park and Ride			
General Cleaning for the P&R building	Daily and 2 people for 2hrs	1,460	hr
Utilities cost for the P&R building	Yearly	224	m2
Monitor CCTV cameras	Allow 1-person hour per day to monitor the cameras (overtime paid to cover additional requirement)	365	hr
Power Consumption - Lighting - Park & Ride	52nr Luma 3 lightsx 254w = 13208w per hour = 13.21kW x 4,380 hours year = 57860kW	57,860	kW
	7nr Luma 1 lightsx 107w = 749w per hour = 0.75kW x 4,380 hours year = 3285kW (as advised by DW Windsor)	3,285	kW
Power Consumption - CCTV Cameras	Allow 25% of the above lighting quantity	14,465	kW
Busway			
Power Consumption - Lighting - Roads	923nr Luma 3 lightsx 254w = 234,442w per hour = 234.44 x 4,380 hours year = 1,026,848kW	1,026,848	kW

Source: Mott MacDonald

3 Funding Arrangements

Funding for the C2C project is intended to be sourced primarily through the City Deal. City Deals provide a funding framework for central government and local partners to agree investment programmes, centred on the promotion of local economic growth and development.

The City Deal Grant is a funding framework for central government and local partners to agree investment programmes, centred on the promotion of local economic growth and development. City Deal funding is being released by central government in tranches. The first tranche of funding for the GCP is worth £100 million (£20 million per year). A further £200m will be approved subject to gateway review and released from April 2020 onwards, and a final £200m will be released from April 2025 onwards.

To meet the funding requirements and to address the impacts and transport requirements of development in the area, the GCP is seeking to recover an appropriate proportion of the cost from local developer contributions, secured through the planning process. The levels of local developer contributions are dependent upon on-going assessments and negotiations and for this reason can only be indicative at this stage. Given the status of discussions at the time of this assessment being undertaken, the working assumption is that £37.7m is to be secured from S106 agreements with developers including Cambourne West (based on a signed S106 agreement for £8.7m), the University of Cambridge West Cambridge development, and from the Bourn Airfield development.

3.1 Funding profile

It should be noted that the rate at which S106 monies can be drawn down will be dependent on the progression of developments being built out, and therefore dependant on market forces. Therefore, Table 6 shows an estimate of when it is believed the S106 funding can be drawn down. If the S106 money does not come through during the delivery of C2C, then required funding will be drawn down from City Deal instead. The S106 monies will then be paid back to City Deal when they become available.

Table 6: C2C Funding Profile – Preferred Option (£000's)

Funding source	2014-19	2020	2021	2022	2023	2024	Total
City Deal	£3,214	£8,661	£10,568	£43,127	£49,504	£7,714	£122,788
Developer Contributions(S106)				£18,850	£18,850		£37,700
TOTAL	£3,214	£8,661	£10,568	£61,977	£68,354	£7,714	£160,488

Source: GCP

4 Accounting Implications

The total scheme costs for the C2C project of £160,488,000 are deemed affordable based on successfully securing funding from the identified funding sources as set out in Section 3.1 and through the GCP Future Investment strategy⁵, which is currently being developed.

At present the position of each funding sources is as follows:

- £122.8m is being sought from City Deal.
- At least £37.7m funding is being sought from developers through S106 contributions, of which £8.7m has been secured in principle through a S106 agreement with Cambourne West.

If costs increase or funding from the identified sources is not secured, then the GCP as scheme promoters will explore other options through the GCP Future Investment Strategy to underwrite these costs. This may involve funding directly or by sourcing additional third-party funding. In any event, as the scheme proceeds, value engineering exercises will be undertaken to review the costs and reduce where possible. Should a financial shortfall be identified then a more robust value engineering process may need to revisit the scheme in order to reduce costs whilst minimising any reduction in the ability of the scheme to achieve its objectives.

The proposed scheme will also incur an increase in revenue costs in order to maintain the new assets. Arrangements for meeting these costs are being explored as part of the scheme's Commercial Case, and considerations of the varying operating and maintenance options. A preferred option for operating and maintenance strategy will be selected at the next phase of scheme development and reported in the FBC, with any financial implications reflected within the Financial Case.

Options to fund any revenue cost shortfalls required to maintain the new system will be explored and reported in the FBC by the GCP as scheme promoters, although it is anticipated that the operating model for the scheme will not result in a need for any revenue costs to be funded directly by the GCP.

4.1 State aid

The GCP as scheme promoters will be using any funding it receives in furtherance of its statutory functions to provide public infrastructure which will not be commercially exploited. In addition, the infrastructure is unlikely to specifically benefit any single particular organisation other than that it is likely to serve multiple existing and future employment and housing sites. Therefore, it is not anticipated that the C2C project has any State Aid implications. However, a full State Aid check will be carried out as part of the FBC.

⁵ <https://www.greatercambridge.org.uk/futureinvestmentstrategy/>

